AUTHOR INDEX TO VOLUME 49

A

Aarden, F. B. . . . 232
Abba, I. A. . . . 1838
Abraham, A. . . . 2433
Achenie, L. E. K. . . . 1216
Acierno, D. . . . 1909
Acosta-Esquijarosa, J. . . . 3074
Adidharma, H. . . . 1044
Adjiman, C. S. . . . 3095
Adler, P. M. . . . 1002, 1085
Agarwal, N. . . . 1821
Agrawal, R. . . . 379
Ahn, H. . . . 1601
Akbarzadeh, K. . . . 2948
Akeprathumchai, S. . . . 1687
Åkermark, B. . . . 151
Akin, D. . . . 2984
Akoum, O. . . . 2433
Alajem, E. . . . 1849
Alboudwarej, H. . . . 2948
Amundson, N. R. . . . 806
Anderlund, M. . . . 151
Andrae, J. C. G. . . . 2149
Anter, A. M. . . . 225
Anthony, E. J. . . . 277
Aptel, P. . . . 1972
Aracil, J. . . . 2631
Aradhye, H. B. . . . 939
Armaou, A. . . . 1922
Arratia, P. E. . . . 168
Asako, Y. . . . 675
Asmar, B. N. . . . 2009
Augier, F. . . . 2300
Azzopardi, B. J. . . . 1383

B

Badini, C. . . . 2173
Baird, D. . . . 2487
Bakshi, B. R. . . . 939, 1350
Balakotaiah, V. . . . 557
Banga, J. . . . 3173
Barat, R. B. . . . 2619
Barba, A. A. . . . 1909
Bardow, A. . . . 323
Barlatier, J. . . . 3095
Barresi, A. A. . . . 1266
Basaran, O. A. . . . 3229
Bashir, R. . . . 2984
Bass, C. A., Jr. . . . 2619
Bautista, L.F. . . . 2631
Bayly, A. E. . . . 2966
Beck, J. . . . 2948
Beenackers, A. A. C. M. . . . 734
Behme, S. . . . 258
Bek-Pedersen, E. . . . 2822
Belcher, B. E. . . . 1168
Bennett, B. . . . 1085
Ben-Tullilah, M. . . . 1849
Bequette, B. W. . . . 82
Berkhoff, M. R. . . . 2211
Bertucco, A. . . . 859, 2671
Bezzo, F. . . . 2133
Bhartiya, S. . . . 411
Bhatia, S. K. . . . 65, 225, 883
Bi, H. T. . . . 1838
Bi, X. . . . 1405, 1421
Biegler, L. T. . . . 286, 438, 1140
Biesheuvel, P. M. . . . 1827
Bigio, D. I. . . . 3150
Billiet, H. A. H. . . . 665, 1158
Bindlish, R. . . . 2071, 2885
Björnbom, P. H. . . . 151, 2149
Blangenois, N. . . . 2228
Blau, G. E. . . . 96
Bloemen, H. H. J. . . . 1895
Blunk, R. H. J. . . . 18
Bocquet, S. . . . 300
Boger, T. . . . 3007
Braatz, R. D. . . . 1776, 2114
Brasser, P. . . . 3018
Bridgwater, J. . . . 2966
Broadhurst, H. . . . 2519
Brown, L. A. . . . 362
Brown, M. A. . . . 925
Brüggemann, S. . . . 1471
Brunazzi, E. . . . 41
Brutin, D. . . . 2759
Buettner, H. M. . . . 2352
Buffham, B. A. . . . 1986
Burke, A. . . . 2609, 3127

C

Caballero, J. A. . . . 2864
Cabral, V. F. . . . 753
Cachot, T. . . . 764
Cardoso, S. S. S. . . . 505, 516, 522
Carr, W. . . . 2461
Carta, G. . . . 1168, 3066
Carta, R. . . . 2232
Casas, J. M. . . . 2199
Castier, M. . . . 753
Chakraborty, A. K. . . . 1614
Chan, S. H. . . . 925
Chang, W.-J. . . . 2984
Chaudhuri, R. V. . . . 3199
Chen, C.-C. . . . 258
Chen, H. . . . 1372
Chen, J.-R. . . . 2427
Chen, P. Y. . . . 2283
Chen, W. B. . . . 1964
Chen, X. . . . 237
Chen, X. D. . . . 1947
Chen, Z. . . . 1250
Cheng, Y.-C. . . . 682
Cheng, Z.-M. . . . 225
Chin, C. Y. . . . 2850
Choi, Y.-J. . . . 3213
Christensen, K. T. . . . 2773
Christofides, P. D. . . . 2079, 2099
Chu, L.-Y. . . . 896
Chuang, K. T. . . . 910
Cibrián, S. . . . 496
Cifuentes, L. . . . 2199
Cisternas, L. A. . . . 1731
Clifton, M. J. . . . 1972
Coakley, W. T. . . . 2773
Corapcioglu, M. Y. . . . 782
Cordeiro, C. F. . . . 1392
Cordiner, J. L. . . . 3095
Coulthard, J. M. . . . 2009
Cournil, M. . . . 2030
Coutelieris, F. A. . . . 248
Cramer, S. M. . . . 82
Cruz, P. . . . 706
Cryer, S. A. . . . 2802
Culbertson, C. T. . . . 2181
Curtis, J. . . . 2328
Cussler, E. L. . . . 991, 1072, 2344
Czarnecki, J. . . . 1024

D

Dabros, T. . . . 1024, 1645
d'Amore, M. . . . 1909
Dash, S. . . . 124
Datskov, I. V. . . . 1216
Dave, R. N. . . . 604
Davidson, J. F. . . . 52
Davies, S. . . . 1076
Davis, J. F. . . . 939
Davis, R. H. . . . 546
DePaoli, A. V. F. . . . 2181
de Almeida, V. F. . . . 2181
De Loos, T. W. . . . 745
de Klerk, A. . . . 1597, 2022
Delgado, J. M. P. Q. . . . 1980

Demin, A. K. 248
Deng, X. 619
DePaoli, D. W. 2181
Derksen, J. J. 1060, 1359, 2700
Di Felice, R. 3270
Di Noto, V. 859
Diakov, V. 2933
Dijkstra, M. F. J. 734
Ding, L.-H. 2433
Ding, L. P. 883
Dochain, D. 113
Doerpinghaus, P. 2487
Dogan, M. 3188
Dogu, G. 3188
Douvartzides, S. L. 248
Doyle, F. J. III 411, 1392, 2383
Drumm, E. C. 626, 642
Du, B. 1109
Dufour, P. 411

E

El-Farra, N. H. 2079
Elnashaie, S. S. E. H. 1250
Elvassore, N. 859, 2671
Englezos, P. 269
Epstein, N. 675
Escudié, R. 585
Eskinat, E. 2224
Etchart, J. P. 2199

F

Fair, J. R. 2452
Falope, G. B. O. 1307
Fan, L.-S. 1109, 1995
Fang, X.-C. 225
Farrenburg, C. A. 2850
Favis, B. D. 1014
Feeley, J. S. 3253
Fei, W. 619
Feng, Y. 2553
Feron, P. H. M. 203
Fiksel, J. 1350
Finfrock, C. C. 1066
Fino, D. 2173
Fischer, U. 2400
Florea, M. 2228
Florusse, L. J. 3260
Fogler, H. S. 3241
Forney, L. J. 727, 1285, 2655
Fort, I. 1612
Fortuin, J. M. H. 335
Fox, R. O. 1266
Fox, V. G. 1140
Francesconi, G. 1516
Franses, E. I. 3229
Fredrickson, A. G. 1050
Freguia, S. 1676
Fung, K. Y. 1193

G

Gal, R. 1849
Galier, S. 1972
Gani, R. 2400, 2822
Ganz, J. 2937
García-Sánchez, F. 799
Garrabrants, A. C. 1317
Gelderbloom, S. J. 844
Gentile, M. 959
Georgakis, C. 1178, 1488
Gerbaud, V. 3074
Gesit, G. 910
Ghufran, M. 3161
Gidaspow, D. 831, 844
Giovanoglou, A. 3095
Gladden, L. F. 2, 1076
Glarborg, P. 2149
Gmehling, J. 530
Godoy, M. J. 1731
Göke, V. 323
Gomez, R. 2984
González-Velasco, J. R. 496
Goyal, V. 1233
Grace, J. R. 675, 1405, 1421, 1838
Grandjean, B. P A. 485
Grange, P. 2228
Greene, G. A. 1066
Grof, Z. 1002
Groß-Hardt, E. 1610
Grossmann, I. E. 2864
Gu, X. 2374
Guay, M. 113
Guedes de Carvalho, J. R F. 1980
Guet, S. 2242
Guiochon, G. A. 626, 642
Guiraud, P. 2300
Gunawan, R. 2114
Guo, Z. 3161
Guohua, L. 619
Gutiérrez-Ortiz, J. I. 496
Gutiérrez-Ortiz, M. A. 496

H

Hacherl, J. M. 2352
Hamersma, P. J. 335
Hamilton, R. 2328
Han, B. 1687
Hao, Y. 619
Hapgood, K. P. 350
Harada, H. 1293
Hardt, S. 566, 578
Harmand, J. 1433
Harris, A. T. 52
Hasebe, S. 969
Hashimoto, I. 969
Hasse, H. 2187
Haugan, A. 1085
Haynes, H. W., Jr. 1883
He, W. 3221
Heibel, A. K. 3007
Heijnen, J. J. 1895
Heinz, D. 2900
Henderson, D. 550
Henrikson, J. T. 718
Henschke, M. 1610
Hernández-Garduza, O. 799
Herri, J.-M. 2030
Herrmann, N. 373
Heslop, M. J. 1986
Hessel, V. 566
Hester, K. 1300
Hinchliffe, M. 2609, 3127
Hirai, S. 10
Hofland, G. W. 2211
Hogendoorn, J. A. 203
Houwing, J. 665, 1158
Hu, Y. H. 3253
Hu, W. 1038
Huan, Z. 745
Huang, Y. 2445
Huang, T. T. 2984
Hudson, J. L. 2234
Hung, K. G. W. 151
Hungerbühler, K. 2400
Huo, Z. 1300
Huseby, O. 1085

I

Ierapetritou, M. G. 1233
Iliuta, I. 485, 1525
Immanuel, C. D. 1392, 2383
Ishikawa, K. 1293
Ismadji, S. 65
Isozaki, S. 1956
Issanchou, S. 1972

J

Jack, R. 373
Jacobson, S. C. 2181
Jaffrin, M. Y. 2433
Jaganathan, R. 3199
Jain, R. K. 1580
Jayanti, S. 30, 2768
Jensen, T. B. 665
Jeong, S.-W. 782
Jia, L. 277
Jiang, L. 1140
Jin, W. 2374
Johns, M. L. 1076
Johnson, B. K. 2264
Jones, A. G. 1127
Jones, D. B. 1533
Jongen, T. R. 1933
Jorge, M. 2059
Joshi, J. B. 2728
Joulia, X. 3074

Jung, M. Y. L. . . . 2114
Jutan, A. . . . 1743

K

Kaldis, S. P. . . . 1702
Kamotani, Y. . . . 557
Kandhai, D. . . . 1060
Kang, M.-S. . . . 3213
Kano, M. . . . 969
Kapantaidakis, G. C. . . . 1702
Kapteijn, F. . . . 3007
Karoutsos, V. . . . 2472
Kaufman, M. . . . 1637
Keh, H. J. . . . 2283
Keim, C. . . . 402
Kerkhof, P. J. A. M. . . . 232
Kevrekidis, I. G. . . . 1922
Kiang, S. . . . 925
Kikkinides, E. S. . . . 1085
Kim, J.-K. . . . 1712
Kim, J. K. . . . 2810
Kiss, I. Z. . . . 2234
Kita, H. . . . 237
Kittilsen, P. . . . 1495
Kleijn, C. R. . . . 3018
Koerts, E. C B. . . . 734
Kokossis, A. C. . . . 1451
Koops, G. . . . 1702
Kopinga, K. . . . 232
Kosek, J. . . . 1002
Koss, H.-J. . . . 323
Kosson, D. S. . . . 1317
Kotai, B. . . . 2533
Kramer, G. J. . . . 1827
Kraska, T. . . . 1569
Kraslawski, A. . . . 1340
Kraume, M. . . . 1611
Krause, A. O. I. . . . 1508
Kukura, J. . . . 168
Kumar, P. S. . . . 203
Kundu, A. . . . 2253

L

Lacks, D. . . . 2980
Ladisch, M. R. . . . 402, 2984
Lan, X. . . . 619
Lang, P. . . . 2533
Langer, R. . . . 2990
Langston, P. A. . . . 2009
Laouir, A. . . . 764
Larachi, F. . . . 485, 1525
Larter, S. . . . 1085
Lattuada, M. . . . 1542
Lauterbach, J. . . . 2158
Le, G. P. . . . 764
Lee, C.-H. . . . 1601
Lee, D. H. . . . 675
Lee, J. W. . . . 1471, 3161
Lee, K. H. . . . 2682
Lee, S. . . . 283
Lee, Y.-L. . . . 1859
Lefevre, A. . . . 2749
Le Goff, P. . . . 764
Leineweber, D. B. . . . 2900
Lele, T. . . . 2158
Lemieux, P. M. . . . 2619
Lenhoff, A. M. . . . 806
Leprévost, J. C. . . . 2749
Lercher, J. A. . . . 214
Li, D. . . . 1024
Li, P. . . . 2974
Li, Q. . . . 1038
Li, X.-Y. . . . 1870
Lian, G. . . . 1334
Liang, L. . . . 283
Liao, Y.-C. . . . 3229
Liaw, M. S. . . . 2966
Libby, B. . . . 991
Lin, G. . . . 3221
Lin, X. . . . 237
Lin, Y. S. . . . 793
Liné, A. . . . 585
Linke, P. . . . 1451
Lisi, D. J. . . . 18
Litster, J. D. . . . 350
Liu, J. . . . 1405, 1421
Liu, K. . . . 2427
Liu, T. . . . 619
Liu, X. . . . 3037
Liu, X. P. . . . 1743
Lode, F. . . . 977, 1516
Lohmann, J. . . . 530
López-Fonseca, R. . . . 496
Lou, H. H. . . . 2445
Lou, Y. . . . 2099
Low, K. H. . . . 2564
Löwe, H. . . . 566
Lucas, K. . . . 323
Lucia, A. . . . 2553
Lueking, A. . . . 1556
Luo, G. . . . 619
Luo, L. . . . 764
Luszczyk, M. . . . 1044
Lyczkowski, R. W. . . . 844
Lylykangas, M. S. . . . 1508

M

Macchietto, S. . . . 2133
Macías-Salinas, R. . . . 799
Mackley, M. R. . . . 2966
Madras, G. . . . 1821
Magalhães, F. D. . . . 706
Mahgerefteh, H. . . . 1307
Makeev, A. G. . . . 1922
Manas-Zloczower, I. . . . 1637
Mannan, M. S. . . . 959
Marchisio, D. L. . . . 1266
Marek, M. . . . 1002
Marquardt, W. . . . 323, 1471, 2900, 3110
Marshall, S. L. . . . 2577, 2595
Martin, D. R. . . . 1334
Martinez, M. . . . 2631
Masbernat, O. . . . 2300
Masliyah, J. H. . . . 1024, 1645
Mason, G. . . . 1986
Matchett, A. J. . . . 2009
Maurer, G. . . . 2662
Mazzotti, M. . . . 977, 1516
McCallum, S. D. . . . 283
McCready, M. J. . . . 288
McKenna, T. F. . . . 1495
Mehranbod, N. . . . 1787
Meier, A. . . . 2937
Meijer, H. . . . 3260
Mendes, A. . . . 706
Middelberg, A. P. J. . . . 1533
Mie, Y. . . . 2039
Miller, K. T. . . . 1300
Mills, P. L. . . . 3199
Misra, P. . . . 2124
Mitrovic, B. M. . . . 1095
Modla, G. . . . 2533
Moggridge, G. D. . . . 2966
Mohanty, K. K. . . . 2454
Moholkar, V. S. . . . 2918
Molnar, K. . . . 2533
Moles, C. G. . . . 3173
Mönnigmann, M. . . . 3110
Montague, G. . . . 2609, 3127
Moon, S.-H. . . . 3213
Morbidelli, M. . . . 977, 1516, 1542
Morris, J. F. . . . 2461
Mosier, N. . . . 2984
Mostofi, R. . . . 831
Mota, J. P B. . . . 2749
Motil, B. J. . . . 557
Mougin, P. . . . 373
Moulijn, J. . . . 3007
Moulin, P. . . . 1972
Mudalamane, R. . . . 3150
Mudde, R. F. . . . 1621, 2242
Muller, J. . . . 1085
Müller, T. E. . . . 214
Mun, S. . . . 2039, 2850
Muske, K. R. . . . 1488
Muzzio, F. J. . . . 168, 2687

N

Nagahashi, Y. . . . 675
Nagrath, D. . . . 82
Nagatsu, Y. . . . 789
Nagy, Z. K. . . . 1776
Naik, V. M. . . . 1933
Nakao, S.-i. . . . 896
Nandakumar, K. . . . 910, 1372
Nekhamkina, O. . . . 1241

Netti, P. A. 1580
Ng, K. M. 1193
Nigam, K. D P. 2253
Niitsuma, T. 896
Nikolaou, M. 2124
Nikolov, A. 550
Nosoko, T. 2715

O

O'Brien, T. J. 2793
Oey, R. S. 1621
Ogata, S. 1956
Ogunnaike, B. A. 1787
Ohno, H. 969
Okamoto, K. 237
Okubo, T. 1293
Olbricht, W. L. 2842
Oldenburg, J. 2900
Oliemans, R. V A. 2242
Ooms, G. 1383, 2242
Ostrovsky, G. M. 1216
Otilio, H. 799
Ottino, J. M. 292

P

Pagliai, P. 3270
Paglianti, A. 41
Palazoğlu, A. 140
Pàmies, J. C. 3260
Pan, T.-W. 813
Pannocchia, G. 426
Pantelides, C. C. 2133
Papadias, D. 151
Papavassiliou, D. V. 1095
Park, C.-W. 2499
Park, C. D. 2715
Park, H. 2461
Parton, T. 859, 2671
Pascheday, A. 1612
Paso, K. G. 3241
Pater, J. T M. 180, 450
Patwardhan, J. A. 2728
Paul, E. L. 2352
Paulsen, V. I. 813
Pekny, J. F. 96
Pel, L. 232
Peppas, N. A. 2990
Pérez -Cisneros, E. S. 2822
Pérez-Salado Kamps, Á. 2662
Peter, S. 2802
Peters, C. J. 3260
Petrus, R. 2419
Pfeffer, R. 604
Pfennig, A. 1610
Pierson, J. A. 727, 1285
Pikturna, J. T. 1266
Piovoso, M. 1787
Pistikopoulos, E. N. 3095
Prada Silvy, R. 2228
Pratsinis, S. E. 1667
Price, P. E., Jr. 309
Prud'homme, R. K. 2264

Q

Qi, H. 2374
Qian, W. 619
Qian, X. 1687
Qin, F. G. F. 1947

R

Raal, J. D. 538
Radosz, M. 1044
Rahmani, N. H G. 1645
Ramagnoli, J. A. 140
Ramjugernath, D. 538
Ramkrishna, D. 1803, 2158, 2328
Ramlakhan Mohen, M. 604
Ramsey, J. M. 2181
Rapaport, A. 1433
Raut, J. S. 1933
Rautanen, P. A. 1508
Rawatlal, R. 471
Rawlings, J. B. 426, 2071, 2885
Realff, M. J. 3138
Reardon, K. F. 2682
Reese, J. M. 3048
Reginato, A. S. 2642
Reignier, J. 1014
Rein, P. W. 2519
Reklaitis, G. V. 96, 3084
Rhodes, M. J. 2317
Rigopoulos, S. 1127
Rios, G. M. 300, 2783
Roberts, B. W. 2842
Roberts, K. J. 373
Rochelle, G. T. 1676, 2363
Rodrigo, A. J. S. 2749
Rodrigues, A. E. 2974
Rodríguez-Donis, I. 3074
Rogers, W. J. 959
Rogerson, M. A. 505, 516, 522
Rohani, S. 1743
Romagnoli, J. A. 140
Romdhane, I. H. 309
Romero, J. 300, 2783
Rong, B.-G. 1340
Rooney, W. C. 438
Rother, M. A. 546
Russell, A. B. 1947
Russell, S. M. 1168
Russell, P. A. 1986
Russo, N. 2173

S

Sánchez-Daza, O. 2822
Sørensen, E. 2564
Saatdjian, E. 2749
Saavedra, A. 300, 2783
Sadowski, G. 258
Sagen, J. 1085
Sahinidis, N. V. 1761
Sakellaropoulos, G. P. 1702
Sanchez, F. 1317
Sanchez, J. 300, 2783
Sanderson, J. 2317
Sandkühler, P. 1542
Santos, J. C. 706
Saracco, G. 2173
Savage, P. E. 718
Savedra, A. 300
Scherer, P. N. 2802
Schmidt, L. D. 1277
Schönfeld, F. 566, 578
Seaton, N. A. 2059
Secchi, A. R. 2642
Sederman, A. J. 1076
Seebauer, E. G. 2114
Sefcik, J. 1542
Servio, P. 269
Shalliker, R. A. 642
Sheikholeslami, R. 194
Sheintuch, M. 1241, 1849
Shekhar, S. M. 30, 2768
Shen, P. 3275
Sikdar, S. K. 1928
Siettos, C. I. 1922
Sim, W. D. 2957
Sivalingam, G. 1821
Sloan, E. D., Jr. 1300
Smith, R. 350, 1712
Smyrl, W. H. 991
Sobera, M. P. 3018
Sohn, I.-S. 2499
Song, H.-S. 1803
Song, Y. 258
Sørensen, E. 2564
Soroush, M. 1787
Specchia, V. 2173
Spengler, J. F. 2773
Starzak, M. J. 471
Steiner, E. 2937
Stoll, J. 2187
Strauss, R. A. 939
Striolo, A. 2671
Stubos, A. K. 1085
Sturzenegger, M. 2937
Subramanian, D. 96
Suekane, T. 10
Sun, W. 140
Sun, Y. 2510
Sundaram, S. S. 1392
Sundararaj, U. 1372
Svendsen, H. F. 1495
Svrcek, W. Y. 2948
Swaney, R. E. 1731

Syamlal, M. 2793
Szalai, E. S. 168, 2687
Szukiewicz, M. 2419

T

Tadrist, L. 2759
Takayama, T. 1956
Talamelli, A. 41
Tan, L. 2374
Tan, R. B. H. 1964
Tanaka, S. 969
Tang, L. 619
Tassonea, V. 2957
Tassone, V. 2957
Tatterson, G. B. 1070
Tavares, F. W. 753
Tawarmalani, M. 1761
Thakar, N. N. 3199
Theodoropoulou, M. A. 2472
Thomas, A. 373
Thompson, M. L. 1838
Thorpe, R. B. 52
Thovert, J.-F. 1085
Tondeur, D. 764
Tong, X. 2510
Topin, F. 2759
Torres, M. A. 1731
Torres, N. V. 3173
Travascio, F. 1580
Trinh, S. 1803
Trofino, A. 1433
Tsakiroglou, C. D. 2472
Tsiakaras, P. 248
Tsouris, C. 283, 2181
Tucker, C. L., III 18
Tweedie, R. 373
Twu, C. H. 2957

U

Ubiera, A. 3066
Ueda, T. 789
Uerdingen, E. 2400
Ureta, J. 642
Uygun, K. 2445

V

Valappil, J. 1178
Valckenborg, R. M E. 232
Van Bochove, G. H. 745
van den Akker, H. E. A. . 1060, 1621, 3018
van den Bleek, C. M. 2442
van der Wielen, L. A. M. . 665, 1158, 2211
van Gulik, W. M. 1895
van Hateren, S. H. 665
van Maanen, H. R. E. 1383
Van Nguyen, T. 3221
Van Nhu, N. 214
van Ommen, J. R. 2442
van Swaaij, W. P. M. 180, 450
van Werven, M. 1383
van As, H. 3007
Varma, A. 2933
Vega, L. F. 3260
Venkataraman, K. 1277
Venkatasubramanian, V. 124
Vera, J. 3173
Vergeldt, F. J. 3007
Verhaegen, M. H G. 1895
Verma, R. P. 2253
Versteeg, G. F. 203
Vigil, R. D. 1266
Villa, J. 2442
Volin, Y. M. 1216
Vrabec, J. 2187

W

Walters, J. K. 2009
Wanat, E. C. 1277
Wang, J. 277
Wang, N.-H. L. 2039, 2850
Wang, W. 1637
Wang, Z. 619
Wang, L. N. 2850
Wankat, P. C. 2810
Warmoeskerken, M. 2918
Warsito, W. 1109
Wasan, D. T. 550
Watanabe, K. 1956
Weerts, A. H. 1334
Wegner, K. 1667
Wei, J. 1072, 3138
Weickert, G. 180, 450
Weizhong, Q. 619
Wen, X. 465
Wesselingh, J. A. 734
Wessling, M. 1702
West, O. R. 283
White, G. 373
Wickramasinghe, S. R. 1687
Wilkinson, D. 373
Willis, M. 2609, 3127
Wilson, A. 1076
Witkamp, G. J. 2211
Wittig, R. 530
Wright, H. 1803
Wu, H. 1542
Wu, L. 1895

X

Xia, J. 2662
Xiang, D. 619
Xiang, L. 619
Xiao, Q. 225
Xie, Y. 2039, 2850
Xiu, G. 2974
Xu, N. 2374
Xuan, Y. 1038, 3275
Xue, B. 2510

Y

Yamaguchi, T. 896
Yan, Y. 1250
Yanagida, T. 2009
Yang, C. 1024
Yang, G. 465
Yang, G. Q. 1995
Yang, L. 2374
Yang, R. T. 1556
Yang, R. Y. 1656
Yang, Y.-R. 869
Yang, Z. 793
Yarranton, H. W. 2948
Yavuz Corapcioglu, M. 782
Yeh, N. K. 2363
Yelash, L. V. 1569
Yew, B. G. 626, 642
Yi, G. 3084
Yokogawa, A. 675
Yokouchi, Y. 10
Yoo, Y.-E. 18
Young, R. E. 2071
Yousefian, F. 1085
Yu, A. B. 1656
Yu, C.-C. 682
Yu, H. 619
Yu, M. 1761
Yuan, W.-K. 225

Z

Zacca, J. J. 2642
Zhang, B. 3037
Zhang, G. 2344
Zhang, J.-j. 1870
Zhang, L. 2374
Zhang, T. 113
Zhang, Y. 3048
Zhanwen, W. 619
Zhao, G.-B. 869
Zhu, J. 2461
Zhukovsky, K. V. 3029
Zou, R. P. 1656
Zukoski, C. F. 362

SUBJECT INDEX TO VOLUME 49

A

abnormal situation management 124
abnormal trends 140
absorption 203, 1676, 2728
acoustic radiation pressure, streaming 2773
acrylonitrile 2228
activated carbon 883, 2059
activity coefficient model 745, 2948, 2957
adsorption 232, 753, 853, 1533, 2631, 2810
adsorption dynamics 883
adsorption/gas . . . 1601, 2059, 2173, 3173
adsorption/liquid 2631, 3066
adsorption-desorption kinetics 2974
aerosol 1667, 2283
agglomeration 350, 2328, 2802
aggregate breakage 1870
aggregation 362, 859, 1038, 1266, 1542, 1645, 1870
aggregation kinetics 1542
aging 3241
agitated tank 585
air separation 793
air-drying 1601
alignment 18
alkylphenol 1085
alkyne 214
amalgamation 1066
amine 214
amino acid salts 203
amylase 2631
anion-exchange membrane 3213
annular-dispersed multiphase flow . . 1383
antisolvent 2671
apparent mass 2009
apparent viscosity 782
aqueous solutions 1676, 2662
arsenic 2199
asphaltene 1645, 2948
asymptotic 2030
axial dispersion 1980, 1995
azeotropic distillation 2533

B

basic-redox sites 2228
basket centrifuge 925
batch control 82, 1178, 1776
batch distillation 2564, 2900, 3074
batch heteroazeotropic rectification . . 2533
batch reactive distillation 3161
batch separation 3095
Bayesian networks 1787
benzene hydrogenation 225
bi-dimensional PDEs 706
bifurcation 2553, 2842, 3110
binder distribution 350
biological systems 1433
biomaterials 1334
bioprocess modeling 2133
bioprocesses 2133, 2984, 3066, 3173
bioseparation 2984, 3066
bipolar plates 18
bitumen 2948
boundary effect 2283
bounded nonlinear control 2079
breakage 1645, 2328
bubble attachment 1024
bubble column hydrodynamics 2442
bubble column slurry reactor 3199
bubble column 1995
bubble formation 1964
bubble phenomena 2918
bubble size 844, 2242
bubble/void phase 1109
bubble-to-slug transition 2242
buffer conductivity 402
bulk density 619

C

calcium nitrite 2728
calibration, probe 1405
capillary pressure 2472
capillary 2759
caprolactam 745
carbon 232
carbon dioxide hydrate 269
carbon dioxide 203, 283, 1676, 1702, 1895, 2662
carbon management 283, 2454
carbon nanotubes 619, 1556
carbon ocean sequestration 283
catalysis 214, 1827, 2419
catalyst support fragmentation 1002
catalyst trapping 151
catalytic combustion 496, 2149
catalytic hydrogenation 2933
catalytic trap 2173
catalytic wall reactor 1277
cavitation 2918
cell cycle 1050
cell population 1050
cellular automata 292
centrifugation 925
cesium vanadates 2173
chaos 292, 869, 1241, 2687
chaotic advection 2749
charged polymer gels 1168
chemical hazard 959
chemical process design 2400
chemical ruler 2264
chemically reactive flow 789
chemically structured models 1050
chlorinated VOCs 496
chlorofluorocarbon replacements . . . 1761
CHO cells 1687
choking flow regime 831
chromatography 626, 642, 977, 1516, 2810, 3066
chromatography (preparative) 3066
circulating fluidized bed . . 52, 1250, 3048
circulation 1066
CO Oxidation 2158
coagulation 1392, 1870
coalescence 546
coextrusion method 2499
cohesion 844
collapsing fluidized bed 844
colloidal dispersions 1542
colloids 2283
column consolidation 626, 642
column efficiency 626, 642
column sequence 2864
combustion 2173, 2427
composite droplet 1014
compressive rheology 362
computational fluid dynamics (CFD) . . 30, 566, 578, 831, 844, 910, 1372, 2133, 2768, 2793, 1933, 2700, 3048
concentration polarization 2783
condensation 1964
confidence regions 438
confinement-induced forces 550
consistency relations 2224
consolidation 844
contact resistance 18
continuous distribution kinetics 1821
control 426, 682, 3173
control, batch process 1178
control, bonded nonlinear 2079
controlled-release 896
convective effect 789
conversion 1838
cooling water systems 1712
copolymerization 2071
core/shell structure 1014
couette flow 1956

coupled transport and mechanics. . . . 1580
coupling of exothermic and endothermic reactions 1277
critical carbon number 3241
critical properties 1569
crystallization 194, 373, 505, 516, 522, 1776, 2030, 2352
cubic equation of state 2957
cupric sulfate 2199
cyclone 41, 1359

D

DAE sensitivity. 1140
Damköhler number. 2264
Darcy's law. 925
Data Structures 96
deactivated sintering 604
Dean flow. 1972
decontamination 1909
defect chemistry 793
deformation 546
density homogeneity 2009
depletion forces 550
deposition 1383
depressurization 1307
design 438, 682, 959, 1072, 1193, 1451, 1731, 2810, 2822, 2864, 2900, 2980, 3084, 3138
design (batch plants) 3084
design conceptual 1451
deuterium 3253
dichloromethane 496
dielectric properties 1909
diesel particulate. 2173
differential-algebraic systems 1743
diffusion 323, 566, 578, 806, 1085, 1168, 2419, 2631, 2984, 3037
diffusion (in membranes) 2783
diffusion coefficient 323
diffusional permeability 896
digesters 411
dilatometry 604
discrete element method 1656
discrete event simulation. 96
disjunctive programming. 2900
dispersion 546
dispersion stability 550
dissolution 1066
distillation . . . 379, 991, 2452, 2864, 3074
distillation extractive. 3074
distillation flowsheet 379, 1340, 2864
distribution ratios 2609
distributive mixing 1637
disturbance models 426
DLVO theory 1024
drag forces 2253
drag reduction. 335, 1956
drop formation 1859
droplets 1533, 2300, 2363, 2461
drug delivery. 1580
dry particle coating 604
drying mechanics 362
dynamic filtration 2433
dynamic interfacial tension 1859
dynamic liquid holdup 1597
dynamic response 2009
dynamic surface tension 3229
dynamics. 411, 1895, 2642

E

ebulliometry 538
economic assessment 2400
electrical capacitance tomography. . . 1109
electrochemical. 1972
electrochromatography 402
electrode flooding 3221
electrohydrodynamic flow. 2181
electrolyte NRTL model 745
electronic materials. 2114
electrophoresis 2682
electrostatic separation 3138
emulsification 1533
emulsion phase 1109
emulsion polymerization control. . . . 1178
energy. 1827, 2454
engineered-structures 2234
entrainer 2533
entrainment. 1383
environmental management. 1350
environmentally conscious design and operation 1350
equation of state mixing rules 2957
equation of state 799, 1044, 3260
equilibrium theory 977
errors-in-variables models. 2577
esterification reactions 1516
ethanol 237, 248
ethylene decomposition 619
ethylene oxidation. 1849
excess properties. 530
excitations 113
exclusion model 1044
exit effect 52
experimental design 323
explosion limits 2427
extractive distillation. 3074
extremum seeking. 113
extrusion modeling 3150
extrusion process stability. 3150
extrusion screw design 3150

F

falling film 2715
fast mixing 566, 578
fast reactions. 2264
fault detection 124, 939, 969
feasibility 3161
feedback control 2099
fiber orientation 18
fiber reactor 734
film-flow 3007
filtration 485, 925
finite elements 1127
Fisher-Tropsch (FT) Synthesis 1803
fixed bed. 2631, 2974
flame 1667
flash algorithm 258
flexibility 1216, 3110
flexibility analysis. 438
flocculation 1645, 1687, 1870, 2773
flow patterns 566, 578
flow regimes. 1838
flow selection 665
flow structure 10
flow visualization 2
fluid mechanics 323, 1383, 1933, 2283, 2300, 2759
fluid slip. 1956
fluidization. . 675, 1838, 2317, 2793, 2802
fluidization enhancement 675
fluidized-bed catalyst 465
fluidized beds. . 53, 675, 1250, 2802, 3048
flux limiters 1140
foam detection 2442
food 2433, 2783
fossil fuel 2454
fouling 194
fractal 869, 1038
fractional crystallization 1731
freeze concentration 1947
friction factor 2759
fuel cells 248, 1827, 3221
fuel NO_x 2149
fuels 1827
fuzzy logic 959

G

gamma-analysis 2442
gas absorption/stripping. 2363, 2715
gas anti-solvent. 2671
gas diffusion 3037
gas mixtures 1986
gas permeation 237
gas phase polymerization 450
gas precipitation 859
gas separation 1702
gas solubility 2662
gas supply channel 3029
gas turbine 2149
gasified biomass 2149
gaslift efficiency 2242
gas-liquid distribution 3007
gas-liquid equilibrium. 225
gas-liquid flow 485, 557
gas-liquid reactors. 2442
gasoline 248

gas-solid fluidized beds. 1060
gelation. 3241
Geldart groups 844
generalized Delaunay triangulation . . 1002
genetic algorithm 2564
glass fiber. . 1405, 1421, 2242, 2499, 2984
global equation solving. 2553
global optimization. 1761
glucose 2933
glutamic acid 373
gradient 665
granulation 350
graphical method 2822
group contribution methods 530
growth. 859, 1266

H

hazards analysis 124
HAZOP 124
heat pack. 505, 516, 522
heat transfer. 1372, 1964, 3018
heavy metals. 1317
heavy *n*-alkanes 3260
Hele-Shaw cell 789
helical ribbon impellers. 2768
Hermite polynomials. 2328
heterogeneous entrainer 3074
hierarchical metrics. 1928
hierarchical representation 124
high H_2/CO ratio. 1277
high temperature sorption 793
high-density circulating fluidized bed 1421
HNO_2, HNO_3 2728
holdup. 485, 3007
hollow fibers 991, 1702
homopolymerization 2071
hybrid process 977, 1516, 2079
hybrid reactor 2149
hydrate. 269, 1300, 2030, 2352
hydroamination. 214
hydrocarbon processing. 1827, 2454
hydrocarbon reforming 1250
hydrodynamics 2300
hydrodynamic instability. 2715
hydrogen 125, 180, 1556, 3188, 3260
hydrogen solubility. 180
hydrogen spillover 1556
hydrogen storage 1556
hydrogenation. 1508
hydrotreating 485
H-zeolites 496

I

ice layer growth, heat transfer. 1947
ideal adsorbed solution theory 65
ill-conditioned systems 2124
imaging 2
immunological synapse. 1614
impacting 2461
impeller 30, 1612
impinging jets 1024, 2264, 2352
incineration. 2619
independent component analysis. 969
inert-core adsorbent 2974
inertial flow 10
inherently safer design 959
inhomogeneous magnetic-field gradient. 1525
inner-recirculation mode. 1849
input constraints 2079
insulin purification 2039
integrated design. 3173
intensification. 2810
interaction between design and control 682
interaction force 3270
interdigitated flow fields 3221
interface 1533
interfacial energy 764
interfacial model. 1621
intermittent wetting. 1317
interparticle forces 1656
interphase drag coefficient 1060
inversion. 806
ion exchange 665, 1168, 2519, 3066
IR thermography. 450
iron catalyst 619
isooctene. 1508
isotherms 753
isotope effect 3253

K

kinetic Monte Carlo 1922
kinetic theory 831
kinetics. 194, 203, 214, 450, 718, 1508, 2173

L

Lagrangian methods 1095
lamellar bilayers 2966
laminar flow 2687, 2749, 2759, 2842
large light particles 675
large-eddy simulation 1359, 2700
Lattice-Boltzmann Methods . . 1060, 1076
layered bed. 1601
LDV 335
leaching 1317
least squares 2577
Lennard-Jones potential 2187
Liapunov-Schmidt (L-S) Reduction . 1803
life cycle assessment. 1350
light scattering 1542
line sources. 1095
linear programming 3173
liquid drop 1610, 1611
liquid holdup. 1525, 1597
liquid mixing 1995
liquid sheets 2363
liquid-liquid equilibrium. 2577
liquid-liquid extraction 1610, 1611
liquid-liquid-liquid equilibria 745
liquid-solid equilibria 1883
longitudinal dispersion 1980
long-term assessment 1317
loop reactor. 2642
low magnitude vibration 2009
low Reynolds number 2842
Lyapunov function 113
lyotropic liquid crystals. 2966

M

magnetic resonance. 2, 10
MAIC. 604
maleic acid hydrogenation 3199
maleic anhydride 465
Markov model 140
mass and energy balances 2224
mass and heat transfer. 300
mass spectrometry 2682
mass transfer. 203, 300, 1317, 1334, 1610, 1611, 1980, 2783, 2850, 3018
mass transfer limitation. 1158
mathematical modeling. . 151, 1050, 1849, 2114, 2609, 2783, 2802, 3066, 3127
maximal temperature 1849
maximum likelihood 2071, 2609
Maxwell-Stefan formulation 883
measurement system design 1488
mechanically activated delivery. 1580
mechanofusion 604
membrane contactor 300
membrane processes 1972
membrane reactor 734, 2933
membrane reformer 1250
membrane separations. 2783
membranes 991, 1702, 3213
mercury 1066
metabolic engineering. 1895
metal oxide 1556, 2937
methane 248, 1300
methane hydrate 269, 2030
methanol. 248
metathetical salts 1731
Metzner-Otto concept. 30
micellar solutions (dynamics, diffusion) 3229
microbial populations 1050
microbubble-solid surface interaction 1024
microcapsule membranes 896
microchannels. 2181
microchips 2181
microfabrication 2984

microfiltration 1687
microfluidics . 566, 578, 2181, 2759, 2984
microgravity 557
micromixing time 2264
micromodel 782
micropore 65
microwave 1821, 1909
milk protein 2211
minimum sintering termperature 604
MINLP 1712, 2864
miscible viscous fingering 789
mist eliminator 41
mist flow 41
mixed salts 194
mixed-conducting oxide 2374
mixed-integer dynamic optimization 2900, 3095
mixed-integer nonlinear programming 1761
mixed-solvent electrolyte solutions . . . 745
mixing cell model 3199
mixing in polymer processing 1637
mixing 30, 52, 471, 566, 578, 585, 1612, 1637, 2317, 2352, 2687, 2700, 2749, 2768
mobility 782
model predictive control 426
model uncertainty 1178, 2079
model-based estimation 2099
modeling 232, 300, 402, 745, 1964, 2030, 2461, 2519, 2948, 2631, 2783
moisture content 1656
molecular design 1761, 3095
molecular simulation 2187
molecular weight distribution 258
moment technique 3188
momentum balances 411
monitoring 2442
monoethanolamine 1676
monolith reactor 3007
Monte Carlo simulation 753, 2059
morphology 1495
MRI 3007
multicomponent adsorption 65, 883
multicomponent separation 379, 1340
multi-dimensional liquid chromatography 2682
multi-equation least squares 2577
multi-functional probe 1405, 1421
multi-functional reactor 977, 1516
multi-lamellar vesicles (MLVs) 2966
multi-objective optimization 2383
multiphase flow . . 2300, 2700, 3048, 3270
multiple Lyapunov functions 2079
multiplicity behavior 1803
multiscale computation . 1922, 2099, 2133
multi-scale strategy 869
multivariable terrain-following 2553
multivessel configuration 2564

N

N_2O emission 277
N_2O_2 277
nano-agglomerate fluidized-bed reactor 619
nanoparticles 550, 1038, 1667, 3275
nanotechnology 3275
NAPL 1085
network 292, 3084
network connectivity 65
nickel 1508
nitrobenzene 232
nitrogen-helium 1986
N-methyldiethanolamine 2662
NMR 232, 1076, 1334
node-superstructure 1712
nonadiabatic reactor 1849
nonhomogeneity 1109
nonideal CSTR 2642
nonisothermal chromatography 402
nonlinear control 1178, 1776, 2885
nonlinear phenomena 2158
nonlinear-dynamics 2234
non-Newtonian fluids 30
non-stoichiometric 1300
NO_X 2728
nozzle 1667
nucleation . 350, 505, 516, 522, 859, 1266
numerical diffusion 1610, 1611, 1621
numerical methods 706, 1127
numerical simulation . . . 2, 151, 611, 1610
numerical solutions 3018

O

offset-free control 426
oil 1085
oil recovery 2454
olefin polymerization 1495
on-line 373
onset precipitation pressure 2671
opal 1293
operability 682
optical fiber 1405, 1421, 2499
optimal design 1433, 2564
optimal wavelet 869
optimization 82, 438, 1216, 1250, 1433, 1451, 2564, 2980, 3084, 3110, 3138, 3173
oscillations 2158
osmotic evaporation 300, 2783
output tracking 1743
oxidation 718
oxidative degradation 1821
oxygen flux 3029
oxygen permeation 2374
oxygen removal 793
oxygen uptake rate 1895
ozone 2793

P

packed bed 10, 557, 619, 734, 1597, 1980, 2022
paraffin 3241
parameter estimation 113, 323, 753, 2071, 2472, 2577, 2609
pareto optimization 1488
partial oxidation 3253
particle flux 1405, 1421
particle image velocimetry (PIV) . . . 2773
particle in-layer structuring 550
particle packing 1656, 2009
particle rheology 626, 642
particle selection 1158
particle size 373, 2211, 2374
particle-size distribution 1392, 2383
particle technology 2802, 3048
particle velocity and concentration . . 1405, 1421
particles 1870, 2793, 2842
particle-tracking 1359
particulate flows 3048
pattern formation 2158
Pd-alumina 3188
PDMS microchannels 2984
PEM fuel cells 3221
percolation 65
performance indicators 2400
perovskite ceramic 793
persistence of excitation 113
perturbation theory 1569
pervaporation 237
pharmaceuticals 1193, 1580, 2352
phase change 225, 1947, 2158
phase diagram 1300
phase equilibria 258, 530, 1569, 3241
phenol 718
phosphate 2211
photocatalytic water purification 734
photochemical reactor 1285
photonic crystal 1293
piperazine 2662
Pitzer ion-interaction 1883
PIV 585
plantwide control 682
plasma-graft pore-filling polymerization 896
plastic optical fiber 2499
plasticization 1702
plastics recycling 3138
plugging 485
Poiseuille number 2759
polydimethylsiloxane 2984
polydispersity 258
polyethylene 450
polymer 1044, 1076
polymer blends 546, 1014
polymer control 2885
polymer degradation 1821
polymer membranes 1702

polymer processing 1372
polymer properties 2609
polymer solutions 258
polymerization of olefins 1002
polymerization. 180, 1392, 3127
polypropylene. 450
polystyrene 1821
population balances 859, 1050, 1127, 1266, 1392, 1542, 1645, 1687, 2328, 2383, 2802
pore fractals 3037
pore-size distribution 2059
pore space reconstruction 1002
porosity 2022
porous catalyst pellets. 3037
porous diffuser 3029
porous media 557, 782, 1085, 1334, 2419, 2472, 3018, 3037
poroviscoelasticity 1580
Portland cement 1317
power consumption. 30, 2768
power plant plumes. 277
precipitation 194, 2948
preparative chromatography 82, 3066
pressure. 1995, 3029
pressure drop. 485, 1712, 3221
pressure fluctuation. 869
pressure gradient. 1525
pressure profiles 2487
pressure swing adsorption. 1140
principal component analysis 939
probabilistic averaging 1838
process design . . . . . see design
process engineering 1933
process intensification . . 2181, 2810, 2918
process miniaturization 2181
process modeling 2133, 2224, 2452, 3138
process monitoring 939, 969, 3095
process optimization . . . . see optimization
process security 2442
process simulation. 2133, 2452
process synthesis . . . . . see design
process systems engineering . . 1350, 2553
propagators. 1076
propane ammoxidation 2228
propylene ammoxidation. 2228
propylene polymerization 2642
propylene 180
protein. 402, 1168, 1533
protein concentration 2433
protein separation 665, 1158
proteomics 2682
pseudo-fluid 3270
pseudoplastic fluids 2768
pyridinium groups. 3213

Q

quadrature method of moments. 1266
quality control 3150

R

radioisotope tracer technique. 2253
Raman Spectroscopy 323, 619, 1300
rate oscillations. 2158
reaction pattern 789
reaction separation 2822
reactive chromatography 977, 1516
reactive distillation 1471, 2822
reactive separation 1451
reactor model/modeling 2, 734, 1241, 1838, 2619
reactor performance 3199
reactors in series. 1433
reciprocal salts 1731
regime map. 350
regular solution theory 2948
rehydration 1334
relative permeability 2472
remediation. 782
Renyi entropy 1637
residence time 471, 2619, 2039
resonance 831
retracting 2461
retrofit analysis 1712, 2400
retrograde melting. 1044
reverse-flow operation 151
Reynolds number 10
rheology 3270
riser exit geometry 52
risk/uncertainty 96, 216, 438, 1307
robust control 1776
robustness. 3110
rock 1076
rotating cylinders 1956
rotating disk 2433
run-to-run control 82
Rushton turbine 2700

S

safety 2427
SAFT equation of state 1044, 3260
sample collection 2363
scale-up. 402, 2810
scaling 2317
Schmidt number 1980
scraped-surface heat exchanger. 1947
screening method 2400
screw extruder 1637
sedimentation 844, 1293, 3270
segregation effect 1014
selective oxidation 465
self-organization. 292
sensor fault detection 1787
sensor placement 1488
separation of proteins 2974
separation techniques . . . 379, 1168, 2452, 2519, 2773, 2822
shear flow. 546
shear rate 1972
shear-induced 2966
short contact time 1277
shortcut method 1471
sieve trays. 910
sigma-map 2442
silica gel. 1601
silica particles. 1293
silicalite 237
similarity 2317
simulated moving bed 665, 1516, 2039, 2810, 2850
simulation. 300, 706, 1241, 1250, 2487, 2793
simulation, process 2802, 2822
single particle modeling 1495
single-drop extraction 1859
singularity theory 1803
size distribution 1870
size exclusion 1158
skeletonization 1002
skim milk 2433
SLE 2957
SMB chromatography. 1158
SMBR 977
SO_2. 277
soda ash 1883
sodium acetate trihydrate. . . 505, 516, 522
SOFC 248
soil 1909
solar chemical reactor. 2937
solar processes 2937
solid oxide fuel cells. 248
solid/liquid separation. 925
solid-liquid equilibria 1044, 2957
solids mixing 52
solids motion 2317
solids processing. 1193
solitary wave. 2715
solubility. 1066, 3260
solvent power 2671
solvent selection 3095
sonochemistry. 2918
soot. 2173
sorbitol 2933
sorption 793
spatially chaotic pattern 1241
spatiotemporal-patterns. 2234
speciation 2199
specific deposit. 485
spray impact 2363
spreading 2461
SQP 1140
stability. 3110
stabilization 1743
standing wave design 2850
startup. 2885
state estimation 1178, 2383
state feedback. 1743
static mixer. 2687
statistical analysis 2802

statistical mechanics 753, 831, 1614, 1922, 2059
statistical process control 939, 969
steam reforming 1277
steric stabilization 1392
stirred tank 2700
stochastic effects 1024
stochastic optimization 96
storage 3084
streaklines 2749
stress 1495
stretching 2687
structural stability 2374
structural/depletion forces 550
structure 1072
subinclusion 1014
subspace identification 2124
sugar 2519
sulfuric acid 2199
supercritical fluids 718, 2671
surface diffusion 3188
surface renewal 335
surfactant foam 782
surfactant 782, 1859, 2966, 3229
suspension 2700, 2842
sustainability indicators 1928
sustainable development 1350, 1928
swirling flow 41, 1359
switching laws 2079
syngas 3253
synthesis 1340
system identification 1922, 2619
systems biology 2682
systems engineering 1451, 2864

T

tablets 1193
tanks in series 471
target linearization 2885
Taylor cells 1956
Taylor-Couette flow 1285
temperature distribution 411
thermal conductivity 1038, 3275
thermal dispersion 1995
thermal machines 764
thermal regeneration 1601
thermal response 1307
thermally coupled 1340, 2864
thermochemistry 1883
thermodynamics 530, 745, 799, 1044, 2199, 2948, 2957, 3260
thermophoresis 2283
thermoresponsive membranes 896
thin film growth 2099
3-D Stokes flow 2749
three-dimensional wave 2715
three-phase fixed-bed reactor 225
titania 1667
tortuosity 2253, 3037
tracer studies 2253, 2619
transient bubbly flow 1621
transport in polymer gels 1580
tray hydraulics 910
trend detection 140
trickle bed 1525
trickle flow 485, 1597
trickle-bed reactor 1525, 2253, 2933
trona 1883
TST 2957
tubular reactor 734
turbulence 335, 1095, 1359, 1612, 1621, 2700
turbulent fluidization 1109
TVD-schemes 1621
twin screw extruders 1933
two-film 2030
two-fluid CFD 1621
two-fluid model 831, 1060
two-phase bubble 1964
two-phase flow 557, 1525, 2472
two-way coupling 2700

U

UIFAC (Dortmund) 530
ultrafiltration 2433
ultrasound 373, 2918
unbaffled tank 1612
uncertainty 96, 216, 438, 1216, 1307
unsteady state 471
UV spectroscopy 859
UV-vis spectroscopy 2671

V

vanadium aluminum oxynitride catalysts 2228
vaporization-ratio 538
vapor-liquid equilibrium 180, 538, 2187, 2577, 2609
variability 438
velocity 1612
Venturi 1383
video microscopy 450
virial coefficients 799, 1569
viscoelasticity 1495, 2487
viscosity 799, 1986
viscous flow 1372, 3188
VOC 1909
voidage variation 2022
volatile compounds 225, 2783
volume averaged models 910
volume expansion 2671

W

wall effect 626, 642, 2022
wall velocity gradient 1972
wastewater treatment 3173
water 718, 2759
water management 3221
water-splitting 3213
wavelet 140, 706, 939
wax deposition 3241
wetting 764, 2253

X

xanthan gum 2133

Y

yeast cells 1687

Z

zeolite 13X 1601
zeolite membrane 237
Ziegler-Natta 180, 450
ZrO_2 2374

TITLE INDEX TO VOLUME 49

A

A Natural Interaction: Chemical Engineering and Molecular Biophysics *(Perspective)* . . . 806
Accounting for Batch Reactor Uncertainty in the Nonlinear MPC of End-Use Properties . . . 1178
Adaptive Extremum Seeking Control of Continuous Stirred-Tank Bioreactors . . . 113
Adsorption Dynamics of Water in Layered Bed for Air-Drying TSA Process . . . 1601
Adsorption of α-Amylase in a Fixed Bed: Operating Efficiency and Kinetic Modeling . . . 2631
Advances in Biomaterials, Drug Delivery, and Bionanotechnology *(Journal Review; AIChE Institute Lecture)* . . . 2990
Aggregation Structure and Thermal Conductivity of Nanofluids . . . 1038
Analysis of Boundary Layer and Solute Transport in Osmotic Evaporation . . . 2783
Analysis of Multicomponent Adsorption Kinetics on Activated Carbon . . . 883
Analytical Breakthrough Curves for Inert Core Adsorbent with Sorption Kinetics . . . 2974
Aqueous Speciation of Arsenic in Sulfuric Acid and Cupric Sulfate Solutions . . . 2199
Asymptotic Models for Gas–Liquid Crystallization in Two-Film Systems . . . 2030
Attainable Reaction and Separation Processes from a Superstructure-Based Method . . . 1451
Automated Retrofit Design of Cooling-Water Systems . . . 1712
Axial Liquid Mixing in High-Pressure Bubble Columns . . . 1995

B

Batch Heteroazeotropic Rectification of a Low α Mixture under Continuous Entrainer Feeding . . . 2533
Bed Nonhomogeneity in Turbulent Gas-Solid Fluidization . . . 1109
Beyond Log-Normal Distributions: Hermite Spectra for Solving Population Balances . . . 2328
Book Reviews . . . 286, 1070, 2452
Bubble Injector Effect on the Gaslift Efficiency . . . 2242

C

Catalyst Wetting Characteristics in Trickle-Bed Reactors . . . 2253
CFD Modeling of Flow Patterns and Hydraulics of Commercial-Scale Sieve Trays . . . 910
CFD Simulations of Bubbling/Collapsing Fluidized Beds for Three Geldart Groups . . . 844
Chaotic Advection in a Three-Dimensional Stokes Flow . . . 2749
Characterization of Asphaltenes Aggregation and Fragmentation in a Shear Field . . . 1645
Characterization of Anion-Exchange Membranes Containing Pyridinium Groups *(Perspective)* . . . 3213
Chemical Complexity: Spontaneous and Engineered Structures . . . 2234
Chemical Processing and Micromixing in Confined Impinging Jets . . . 2264
Chemical Product Engineering *(Perspective)* . . . 1072
CO_2 Plasticization of Polyethersulfone/Polyimide Gas-Separation Membranes . . . 1702
Comparing Flow-Reversal and Inner Recirculation Reactors: Experiments and Simulations . . . 1849
Comparing True Countercurrent and Simulated Moving-Bed Chromatographic Reactors . . . 977
Complex Systems *(Perspective)* . . . 292
Convective Heat and Mass Transfer to a Cylinder Sheathed by a Porous Layer . . . 3018
Coordinating Feedback and Switching for Control of Hybrid Nonlinear Processes . . . 2079
Core–Shell Structure and Segregation Effects in Composite Droplet Polymer Blends . . . 1014
Correlating Polymer Resin and End-Use Properties to Molecular-Weight Distribution . . . 2609
Coupled Macromolecular Transport and Gel Mechanics: Poroviscoelastic Approach . . . 1580

D

Decoding Communications between Cells in the Immune System Using Principles of Chemical Engineering *(Perspective)* . . . 1614
Design and Optimization of Free-Fall Electrostatic Separators for Plastics Recycling . . . 3138
Design Concept to Reduce Fuel NO_x in Catalytic Combustion of Gasified Biomass . . . 2149
Design of Alternative Refrigerants via Global Optimization . . . 1761
Design of Separation Schemes for Fractional Crystallization of Metathetical Salts . . . 1731
Design of SMB for a Nonlinear Amino Acid System with Mass-Transfer Effects . . . 2850
Detecting Abnormal Process Trends by Wavelet-Domain Hidden Markov Models . . . 140
Development of an Inherent Safety Index Based on Fuzzy Logic . . . 959
Development of Fluidized-Bed Catalyst for Partial Oxidation of *n*-Butane . . . 465
Diagnostic Tool to Detect Electrode Flooding in Proton-Exchange-Membrane Fuel Cells . . . 3221
Diagnostic Nonlinear Analysis of Fischer-Tropsch Synthesis in Stirred-Tank Slurry Reactors . . . 1803
Diffusing with Stefan and Maxwell . . . 806
Distillation in Hollow Fibers . . . 2344

Disturbance Models for Offset-Free Model-Predictive Control . . . 426
Dryout Phenomena in a Three-Phase Fixed-Bed Reactor . . . 225
Dynamic Consistency Relations for Process Modeling . . . 2224
Dynamics of Flow and Diffusion of Adsorbing Gases in Al_2O_3 and Pd-Al_2O_3 Pellets . . . 3188
Dynamics of Isoelectric Precipitation of Casein Using Sulfuric Acid . . . 2211

E

Early Detection of Foam Formation in Bubble Columns by Attractor Comparison . . . 2442
Effect of Active Species Mobility on Soot-Combustion Over Cs-V Catalysts . . . 2173
Effect of Density Homogeneity on the Dynamic Response of Powder Beds . . . 2009
Effect of Drag Reducers on Transport Phenomena in Turbulent Pipe Flow . . . 335
Effect of Fluid Properties on Dispersion in Flow through Packed Beds . . . 1980
Effect of Hydrodynamics on Reactive Mixing in Laminar Flows . . . 168
Effect of Pore-Network Connectivity on Multicomponent Adsorption of Large Molecules . . . 65
Effect of the Size and Amount of ZrO_2 Addition on Properties of $SrCo_{0.4}Fe_{0.6}O_{3-\delta}$ . . . 2374
Effects of Finger-Growth Velocity on Reactive Miscible Viscous Fingering . . . 789
Effects of Fractal Trajectory on Gas Diffusion in Porous Media . . . 3037
Efficient Simulation of Time-Dependent Flows: Application to a Twin Screw Extruder . . . 1933
Electrochemical Measurement of Velocity Gradient at the Wall of a Helical Tube . . . 1972
Electrohydrodynamic Mixing in Microchannels . . . 2181
Enhanced Conductivity of Fuel Cell Plates through Controlled Fiber Orientation . . . 18
Enhancement of Large-Particle Gas-Fluidization by Adding Liquid . . . 675
Entropic Characterization of Distributive Mixing in Polymer Processing Equipment . . . 1637
Equilibrium of Oxygen Sorption on Perovskite-Type Lanthanum Cobaltite Sorbent . . . 793
Evolutionary Operation and Control of Chromatographic Processes . . . 82
Experimental Analysis of Hydrodynamics in a Radially Agitated Tank . . . 585
Experimental and Simulation Studies of Heat Transfer in Polymer Melts . . . 1372
Experimental Tests of Two-Phase Fluid Model of Drying Consolidation . . . 362

F

Feasible Products in Batch Reactive Distillation . . . 3161
Feedback Control of Growth Rate and Surface Roughness in Thin Film Growth . . . 2099
Fines Deposition Dynamics in Gas–Liquid Trickle Flow Reactors . . . 485
Finite-Element Scheme for Solution of the Dynamic Population Balance Equation . . . 1127
Flocculation of Biological Cells: Experiment vs. Theory . . . 1687
Flow between Two Coaxial Rotating Cylinders with a Highly Water-Repellent Wall . . . 1956
Flow-Induced Particulate Separations . . . 2842
Fluid Dynamic Simulation of O_3 Decomposition in a Bubbling Fluidized Bed . . . 2793
Formation Process of Three-Dimensional Arrays from Silica Spheres . . . 1293
Framework for Evaluating the Feasibility/Operability of Nonconvex Processes . . . 1233
Fuel Options for Solid Oxide Fuel Cells: a Thermodynamic Analysis . . . 248
Fundamental Approach to the Design and Optimization of Static Mixers . . . 2687
Fundamental Thermal-Hydraulic Pulp Digester Model with Grade Transition . . . 411

G

Gas and Liquid Distribution in the Monolith Film Flow Reactor . . . 3007
Gas–Liquid Two-Phase Flow through Packed Beds in Microgravity . . . 557
Gas Turbulence Modulation in a Two-Fluid Model for Gas–Solid Flows . . . 3048
General Hybrid Multizonal/CFD Approach for Bioreactor Modeling . . . 2133
Generalized Least-Squares Parameter Estimation from Multiequation Implicit Models . . . 2577
Glucose Hydrogenation in a Membrane Trickle-Bed Reactor . . . 2933
Graphical and Stage-to-Stage Methods for Reactive Distillation Column Design . . . 2822

H

Heat Transfer at the Subcooled-Scraped Surface with/without Phase Change . . . 1947
Heterogeneous Batch-Extractive Distillation of Minimum Boiling Azeotropic Mixtures . . . 3074
Hierarchical Multiobjective Strategy for Particle-Size Distribution Control . . . 2383
High Shear Skim Milk Ultrafiltration Using Rotating Disk Filtration Systems . . . 2433
Hybrid Approach to Modeling an Industrial Polyethylene Process . . . 3127
Hydroamination on Homogeneous and Heterogeneous Catalysts: Kinetic Study . . . 214
Hydrodynamic Similarity of Solids Motion and Mixing in Bubbling Fluidized Beds . . . 2317
Hydrogen Storage in Carbon Nanotubes: Residual Metal Content and Pretreatment Temperature . . . 1556

I

Identification of an Ideal Reactor Model in a Secondary Combustion Chamber . . . 2619
Inertial Flow Structures in a Simple-Packed Bed of Spheres . . . 10

Influence of Exit Geometry in Circulating Fluidized-Bed Risers . . . 52
Influence of *n*-Paraffin Composition on the Aging of Wax-Oil Gel Deposits . . . 3241
Input Design for Model Order Determination in Subspace Identification . . . 2124
Integrated Approach to Optimization of an Ultrasonic Processor . . . 2918
Integrated Design of Bioprocess Plants . . . 3173
Integrated Framework for Abnormal Event Management and Process Hazards Analysis . . . 124
Interaction of a Sphere with a Suspension of Other Spheres . . . 3270
Interfacial Protein Networks and Their Impact on Droplet Breakup . . . 1533
Interphase Drag Coefficients in Gas–Solid Flows . . . 1060
Investigation of Impinging-Jet Crystallization with a Calcium Oxalate Model System . . . 2352

K

Kinetics of Microbubble–Solid Surface Interaction and Attachment . . . 1024
Kinetics of Microwave-Assisted Oxidative Degradation of Polystyrene in Solution . . . 1821
Kinetics of Particle Formation in the Gas Antisolvent Precipitation Process . . . 859
Kinetics of the Reaction of CO_2 with Aqueous Potassium Salt of Taurine and Glycine . . . 203

L

Laminar Mixing in Different Interdigital Micromixers: I. Experimental Characterization . . . 566
Laminar Mixing in Different Interdigital Micromixers: II. Numerical Simulations . . . 578
Leaching Model for a Cement Mortar Exposed to Intermittent Wetting and Drying . . . 1317
Letters to the Editor . . . 1610, 2232, 3275
Liquid Holdup in Packed Beds at Low Mass Flux . . . 1597
Liquid-Phase Mass Transfer in Spray Contactors . . . 2363
Liquid-Phase Hydrogenation Kinetics of Isooctenes on Ni/Al_2O_3 . . . 1508

M

Magnetic Resonance: Ongoing and Future Role in Chemical Engineering Research *(Perspective)* . . . 2
Mass-Transfer Effects During Separation of Proteins in SMB by Size Exclusion . . . 1158
Mathematical Analysis of Physicochemical Processes on Catalytic Surfaces . . . 2158
Maximum *A Posteriori* Estimation of Transient Enhanced Diffusion Energetics . . . 2114
Maximum Carrying Capacity and Granular Temperature of A, B and C Particles . . . 831
Mechanics of Column Beds: I. Acquisition of the Relevant Parameters . . . 626
Mechanics of Column Beds: II. Modeling of Coupled Stress-Strain-Flow Behavior . . . 642
Mechanism for N_2O Formation from NO at Ambient Temperature . . . 277
Methane Hydrate Nonstoichiometry and Phase Diagram . . . 1300
Micellar Dissolution and Diffusion Effects on Adsorption Dynamics of Surfactants . . . 3229
Microfiber Assisted Fabrication of Microfluidic Channels Using Poly(dimethylsiloxane) . . . 2984
Microscopic/Stochastic Timesteppers and "Coarse" Control: a KMC Example . . . 1922
Microstreaming Effects on Particle Concentration in an Ultrasonic Standing Wave . . . 2773
Microwaves in Soil Remediation from VOCs. 1. Heat and Mass Transfer Aspects . . . 1909
Mixed-Logic Dynamic Optimization Applied to Batch Distillation Process Design . . . 2900
Mixing of Power-Law Fluids Using Anchors: Metzner-Otto Concept Revisited . . . 30
Mixing of Pseudoplastic Fluids Using Helical Ribbon Impellers . . . 2768
Model for Temperature Profiles in Large Diameter Electrochromatography Columns . . . 402
Model-Based Measurement of Diffusion Using Raman Spectroscopy . . . 323
Modeling Adsorption of Cane-Sugar Solution Colorant in Packed-Bed Ion Exchangers . . . 2519
Modeling and Optimization of a Novel Membrane Reformer for Higher Hydrocarbons . . . 1250
Modeling and Simulation of Propylene Polymerization in Nonideal Loop Reactors . . . 2642
Modeling Heat and Mass Transfer in Osmotic Evaporation Process . . . 300
Modeling of CO_2 Capture by Aqueous Monoethanolamine . . . 1676
Modeling of Hydrogenation of Maleic Acid in a Bubble-Column Slurry Reactor . . . 3199
Modeling Particle-Size Distribution Dynamics in a Flocculation System . . . 1870
Modeling Structure Effects on Aggregation Kinetics in Colloidal Dispersions . . . 1542
Modeling Transient Stresses in Spherical Vessels During Blowdown under Fire Attack . . . 1307
Modeling Wet-Gas Annular/Dispersed Flow through a Venturi . . . 1383
Modeling of Morphogenesis of Polyolefin Particles: Catalyst Fragmentation . . . 1002
Modelling the Hydration of Foodstuffs: Temperature Effects . . . 1334
Monitoring Independent Components for Fault Detection . . . 969
Monte Carlo Simulation of Adsorption Using 2-D Models of Heterogeneous Solids . . . 753
Morphology of Methane and Carbon Dioxide Hydrates Formed from Water Droplets . . . 269
Multicomponent Diffusion Theory and Its Applications to Polymer-Solvent Systems . . . 309
Multicomponent Flash Algorithm for Mixtures Containing Polydisperse Polymers . . . 258
Multilamellar Vesicles in a Commercial Surfactant System . . . 2966
Multiscale Resolution of Fluidized-Bed Pressure Fluctuations . . . 869

Multiscale SPC Using Wavelets: Theoretical Analysis and Properties . . . 939
Multivariable Terrain Methods . . . 2553

N

Negatively Buoyant CO_2-Hydrate Composite for Ocean Carbon Sequestration . . . 283
New Maximum-Likelihood Method for Reduction of Distribution-Coefficient Data . . . 2595
New Solid Equation of State Combining Excess Energy Mixing Rule for Solid-Liquid Phase Equilibria . . . 2957
New Vistas in Dispersion Science and Engineering *(Perspective)* . . . 550
Nitrobenzene Adsorption in Activated Carbon as Observed by NMR . . . 232
Nonequilibrium Capillary Pressure and Relative Permeability Curves of Porous Media . . . 2472
Novel Method for the Fabrication of Gradient-Index Plastic Optical Fibers . . . 2499
Novel Multifunctional Optical Fiber Probe: I. Development and Validation . . . 1405
Novel Multifunctional Optical Fiber Probe: II. High-Density CFB Measurements . . . 1421
Novel Solar Reactor for Studying Ultrafast Gas-Solid Reactions Above 2,000 K . . . 2937
Nozzle-Quenching Process for Controlled Flame Synthesis of Titania Nanoparticles . . . 1667
Nucleation and Kinetics of Mixed Salts in Scaling . . . 194
Nucleation Regime Map for Liquid Bound Granules . . . 350
Numerical Simulation of Solids Suspension in a Stirred Tank . . . 2700
Numerical Study of the Packing of Wet Coarse Uniform Spheres . . . 1656

O

Observations and Process Parameter Sensitivities in Fluid-Bed Granulation . . . 2802
One-Dimensional Centrifugation Model . . . 925
On-Line Monitoring of a Crystallization Process . . . 373
Optical and Infrared Imaging of Growing Polyolefin Particles . . . 450
Optimal Design of Batch-Storage Network with Recycle Streams . . . 3084
Optimal Design of Interconnected Bioreactors: New Results . . . 1433
Optimal Measurement System Design for Chemical Processes . . . 1488
Optimal Process Design with Model Parameter Uncertainty and Process Variability . . . 438
Optimal Region for Design and Control of Ternary Systems . . . 682
Optimum Photolysis in Taylor–Couette Flow . . . 727
Oxidative Destruction of Dichloromethane over Protonic Zeolites . . . 496
Optimal Solvent Design for Batch Separation Based on Economic Performance . . . 3095

P

Parameter Estimation for Industrial Polymerization Processes . . . 2071
Partially Thermally Coupled Distillation Systems for Multicomponent Separations . . . 1340
Particle-Size Distribution Effects in Batch Adsorption . . . 3066
Performance of Immobilized Photocatalytic Reactors in Continuous Mode . . . 734
Perturbation Viscometer to Measure the Viscosity Gradients of Gas Mixtures . . . 1986
Photolytic Reactors: Similitude in Taylor–Couette and Channel Flows . . . 1285
Physical Model Analysis of Foam-TCE Displacement in Porous Media . . . 782
Polydisperse Model for the Hydrodynamics of Expanded-Bed Adsorption Systems . . . 2510
Polymer-Zeolite Composite Membranes for Direct Methanol Fuel Cells . . . 991
Population Balance Equations for Cell and Microbial Cultures Revisited . . . 1050
Population Balance PSD Model for Emulsion Polymerization with Steric Stabilizers . . . 1392
Positioning of Salt Gradients in Ion-Exchange SMB . . . 665
Predicting Adsorption of Water/Organic Mixtures Using Molecular Simulation . . . 2059
Prediction of Phase Equilibria and Excess Properties for Systems with Sulfones . . . 530
Pressure Profiles along an Abrupt 4:1 Planar Contraction . . . 2487
Probabilistic Model for Sensor Fault Detection and Identification . . . 1787
Process Security Analysis: γ-Analysis and Σ-Map . . . 2445
Process Uncertainty: Case of Insufficient Process Data at the Operation Stage . . . 1216
Process Variation and the Transient Behavior of Extruders . . . 3150
Product-Centered Processing: Pharmaceutical Tablets and Capsules . . . 1193
Production of Carbon Nanotubes in a Packed Bed and a Fluidized Bed . . . 619
Promotion of Deactivated Sintering by Dry-Particle Coating . . . 604
Propane Ammoxidation Catalyst Based on Vanadium-Aluminum Oxynitride . . . 2228
Propene Bulk Polymerization Kinetics: Role of Prepolymerization and Hydrogen . . . 180
Protein Partitioning and Transport in Supported Cationic Acrylamide-Based Hydrogels . . . 1168
Proteomics: An Exciting New Science, but Where are the Chemical Engineers? *(Perspective)* . . . 2682

Q

Quadrature Method of Moments for Population-Balance Equations . . . 1266

R

Real-Time Optimization in Nonlinear Chemical Processes: Need For Global Optimizer . . . 2980
Reconstruction of the O_2 Uptake Rate and CO_2 Evolution Rate on a Time Scale of Seconds . . . 1895
Regular Solution Model for Asphaltene Precipitation from Bitumens and Solvents . . . 2948

Relationship Between Volume Expansion, Solvent-Power, and Precipitation in GAS Processes. 2671
Residence Time Distribution in a Size-Exclusion SMB for Insulin Purification 2039
Retrograde Melting Behavior in Polyolefin+ Solvent+Antisolvent Solutions. 1044
Reverse-Flow Operation for Application of Imperfectly Immobilized Catalysts. 151
Robust Nonlinear Model Predictive Control of Batch Processes. 1776

S

Scaling and Intensification Procedures for Simulated Moving-Bed Systems 2810
Screening for Profitable Retrofit Options of Chemical Processes: a New Method 2400
Sensitivity Study on Interfacial Closure Laws in Two-Fluid Bubbly Flow Simulations 1621
Separation Performance Predictions of a Stairmand High-Efficiency Cyclone 1359
Shortcut Method for Kinetically Controlled Reactive Distillation Systems. 1471
Short-Term Solubility of Eight Alloys Circulating in Mercury at Room Temperature 1066
Similitude in Stirred-Tank Reactors: Laminar Feed 2655
Simple and Safe Method for Determining Explosion Limits at Elevated Pressures 2427
Simplified Design of Axial-Flow Cyclone Mist Eliminators 41
Simplified Model for Droplet Growth in Shear Flow. 546
Simulation and Optimization of Pressure-Swing Adsorption Systems for Air Separation 1140
Simulation-Optimization Framework for Stochastic Optimization of R&D Pipeline Management 96
Simultaneous Optimal Design and Operation of Multivessel Batch Distillation 2564
Single Drop Impaction on a Solid Surface. 2461
Slip Velocity and Drag Law in a Liquid-Liquid Homogeneous Dispersed Flow 2300
Solidification in Heat Packs: I. Nucleation Rate 505
Solidification in Heat Packs: II. Role of Cavitation 516
Solidification in Heat Packs: III. Metallic Trigger 522
Solubility of CO_2 in (H_2O+Piperazine) and in (H_2O+MDEA+Piperazine). 2662
Solubility of Hydrogen in Heavy *n*-Alkanes: Experiments and SAFT Modeling 3260
Spanning the Flow Regimes: Generic Fluidized-Bed Reactor Model. 1838
Stationary Spatially Complex Solutions in Cross-Flow Reactors with Two Reactions. 1241
Steady-State Process Optimization with Guaranteed Robust Stability and Feasibility. 3110
Steam Reforming of Methane and Water-Gas Shift in Catalytic Wall Reactors 1277
Structure Effect and Fractal Characterization of Gas Diffusion in a Porous Catalyst Pellet 3037
Surfactants Effects on Mass Transfer During Drop-Formation and Drop Falling Stages 1859
Sustainable Development and Sustainability Metrics *(Perspective)* 1928
Synthesis of Methylacetate in a Simulated Moving-Bed Reactor: Experiments and Modeling 1516
Synthesis of Multicomponent Distillation Column Configurations 379
Synthesis of Silicalite Tubular Membranes by *In Situ* Crystallization 237

T

2-D Wavelet-Based Adaptive-Grid Method for the Resolution of PDEs. 706
3D Model of Oxygen Transport in a Porous Diffuser of a PEM Fuel Cell 3029
Target Linearization and Model Predictive Control of Polymerization Processes 2885
Testing the Relative Importance of Mass and Heat Resistances in Solid Catalysts 2419
The Near-Term Energy Challenge *(Perspective)* 2454
The Quest for Sustainability: Challenges for Process Systems Engineering *(Perspective)* 1350
Theoretical Analysis of Two-Phase Bubble Formation in an Immiscible Liquid 1964
Theory of Trickle-Bed Magnetohydrodynamics under Magnetic-Field Gradients 1525
Thermal Machines Based on Surface Energy of Wetting: Thermodynamic Analysis 764
Thermodynamic Isotope Effect in Partial Oxidation of Methane to Syngas 3253
Thermodynamic Solution Model for Trona Brines. 1883
Thermodynamically Equivalent Configurations for Thermally Coupled Distillation 2864
Thermophoresis of an Aerosol Sphere Parallel to One or Two Plane Walls 2283
Thermoresponsive Transport through Porous Membranes with Grafted PNIPAM Gates. 896
Three-Dimensional Wave Dynamics on a Falling Film and Associated Mass Transfer 2715
Three-Liquid Phase Equilibria in Water+Benzene+ Caprolactam+$(NH_4)_2SO_4$ Mixtures 745
Tracking Control of General Nonlinear Differential-Algebraic Equation Systems 1743
Transient Method for the Liquid Laminar Flow Friction Factor in Microtubes 2759
Transport of Organic Components from Immobile and Bypassed Oil in Porous Media 1085
Transport Properties for Turbulent Dispersion from Wall Sources 1095
Two-Section Reactor Model for Autothermal Reforming of Methane to Synthesis Gas 1827

U

Unified Model for NO_X Absorption in Aqueous Alkaline and Dilute Acidic Solutions. 2728
Unsteady-State Residence-Time Distribution in Perfectly Mixed Vessels. 471
Using MR Techniques to Probe Permeability Reduction in Rock Cores. 1076

V

Vaporization Ratio in Differential Ebulliometers for Measuring Limiting Activity Coefficients 538
Vapor-Liquid Equilibria of Mixtures Containing Nitrogen, Oxygen, Carbon Dioxide, and Ethane 2187
Viscoelastic Model for Particle Fragmentation in Olefin Polymerization 1495
Viscosity Model for Pure Liquids Based on the Eyring Theory and a Cubic EOS 799
Voidage Variation in Packed Beds at Small Column to Particle Diameter Ratio 2022
Volume-Translated Equations of State: Empirical Approach and Physical Relevance 1569

W

Water-Density Effects on Phenol Oxidation in Supercritical Water 718